IN THE SPECIFICATION

Please amend the paragraphs of the specification as follows:

On page 1, please replace paragraph [0003] with the following paragraph:

A modern day communication system is required to support a variety of applications. One such communication system is a code division multiple access (CDMA) system which conforms to the "TIA/EIA/IS-95 Mobile Station-Base Station Compatibility Standard for Dual-Mode Wideband Spread Spectrum Cellular ~~System",~~ System," hereinafter referred to as the IS-95 standard. The CDMA system allows for voice and data communications between users over a terrestrial link. The use of CDMA techniques in a multiple access communication system is disclosed in U.S. Patent No. 4,901,307, entitled "SPREAD SPECTRUM MULTIPLE ACCESS COMMUNICATION SYSTEM USING SATELLITE OR TERRESTRIAL ~~REPEATERS",~~ REPEATERS," and U.S. Patent No. 5,103,459, entitled "SYSTEM AND METHOD FOR GENERATING WAVEFORMS IN A CDMA CELLULAR TELEPHONE ~~SYSTEM",~~ SYSTEM," both assigned to the assignee of the present invention and incorporated by reference herein.

On page 2, please replace paragraph [0006] with the following paragraph:

The mobile station communicates with at least one base station during a communication. CDMA mobile stations are capable of communicating with multiple base stations simultaneously during soft handoff. Soft handoff is the process of establishing a link with a new base station before breaking the link with the previous base station. Soft handoff minimizes the probability of dropped calls. The method and system for providing a communication with a mobile station through more than one base station during the soft handoff process are disclosed in U.S. Patent No. 5,267,261, entitled "MOBILE ASSISTED SOFT HANDOFF IN A CDMA CELLULAR TELEPHONE SYSTEM," assigned to the assignee of the present invention and incorporated by reference herein. Softer handoff is the process whereby the communication occurs over multiple sectors which are serviced by the same base station. The process of softer handoff is described in detail in U.S. Patent Application Serial No. 08/763,498, entitled "METHOD AND APPARATUS

FOR PERFORMING HANDOFF BETWEEN SECTORS OF A COMMON BASE ~~STATION",~~ STATION," filed December 11, 1996, now U.S. Patent No. 5,933,787, issued August 3, 1999, by Klein S. Gilhousen et al., assigned to the assignee of the present invention and incorporated by reference herein.

On page 3, please replace paragraph [0007] with the following paragraph:

Given the growing demand for wireless data applications, the need for very efficient wireless data communication systems has become increasingly significant. The IS-95 standard is capable of transmitting traffic data and voice data over the forward and reverse links. A method for transmitting traffic data in code channel frames of fixed size is described in detail in U.S. Patent No. 5,504,773, entitled "METHOD AND APPARATUS FOR THE FORMATTING OF DATA FOR ~~TRANSMISSION",~~ TRANSMISSION," assigned to the assignee of the present invention and incorporated by reference herein. In accordance with the IS-95 standard, the traffic data or voice data is partitioned into code channel frames which are 20 msec. wide with data rates as high as 14.4 Kbps.

On page 3, please replace paragraph [0008] with the following paragraph:

A significant difference between voice services and data services is the fact that the former imposes stringent and fixed delay requirements. Typically, the overall one-way delay of speech frames must be less than 100 msec. In contrast, the data delay can become a variable parameter used to optimize the efficiency of the data communication system. Specifically, more efficient error correcting coding techniques which require significantly larger delays than those that can be tolerated by voice services can be utilized. An exemplary efficient coding scheme for data is disclosed in U.S. Patent Application Serial No. 08/743,688, entitled "SOFT DECISION OUTPUT DECODER FOR DECODING CONVOLUTIONALLY ENCODED ~~CODEWORDS",~~ CODEWORDS," filed November 6, 1996, now U.S. Patent No. 5,933,462, issued August 3, 1999, by Andrew J. Viterbi et al., assigned to the assignee of the present invention and incorporated by reference herein.

On page 4, please replace paragraph [0012] with the following paragraph:

It is well known that in cellular systems the signal-to-noise-and- interference ratio (C/I) of any given user is a function of the location of the user within the coverage area. In order to maintain a given level of service, TDMA and FDMA systems resort to frequency reuse techniques, i.e., not all frequency channels and/or time slots are used in each base station. In a CDMA system, the same frequency allocation is reused in every cell of the system, thereby improving the overall efficiency. The C/I that any given user's mobile station achieves determines the information rate that can be supported for this particular link from the base station to the user's mobile station. Given the specific modulation and error correction method used for the transmission, which the present invention seek to optimize for data transmissions, a given level of performance is achieved at a corresponding level of C/I. For idealized cellular system with hexagonal cell layouts and utilizing a common frequency in every cell, the distribution of C/I achieved within the idealized cells can be calculated.

On page 4, please replace paragraph [0013] with the following paragraph:

The C/I achieved by any given user is a function of the path loss, which for terrestrial cellular systems increases as r^3 to r^5, where r is the distance to the radiating source. Furthermore, the path loss is subject to random variations due to man-made or natural obstructions within the path of the radio wave. These random variations are typically modeled as a lognormal shadowing random process with a standard deviation of 8 dB. The resulting C/I distribution achieved for an ideal hexagonal cellular layout with omni-directional base station antennas, r^4 propagation law, and shadowing process with 8 dB standard deviation is shown in [[Fig.]] FIG. 10.

On page 6, please replace paragraph [0016] with the following paragraph:

It is an object of the present invention to improve utilization of the forward and reverse link capacity in the data communication system. Upon receipt of the paging messages from one or more base stations, the mobile station measures the signal-to-noise-and-interference ratio (C/I) of the forward link signals (e.g., the forward link pilot signals) at every time slots and selects the best base station using a set of parameters which can comprise the present and previous C/I

measurements. In the exemplary embodiment, at every time slot, the mobile station transmits to the selected base station on a dedicated data request (DRC) channel a request for transmission at the highest data rate which the measured C/I can reliably support. The selected base station transmits data, in data packets, at a data rate not exceeding the data rate received from the mobile station on the DRC channel. By transmitting from the best base station at every time slot, improved throughput and transmission delay are achieved.

On page 6, please replace paragraph [0016] with the following paragraph:

It is another object of the present invention to improve performance by transmitting from the selected base station at the peak transmit power for the duration of one or more time slots to a mobile station at the data rate requested by the mobile station. In the exemplary CDMA communication system, the base stations operate at a predetermined back-off (e.g., 3 dB) from the available transmit power to account for variations in usage. Thus, the average transmit power is half of the peak power. However, in the present invention, since high speed data transmissions are scheduled and power is typically not shared (e.g., among transmissions), it is not necessary to back-off from the available peak transmit power.

On page 7, please replace paragraph [0021] with the following paragraph:

It is yet another object of the present invention for the mobile station to select the best base station candidates for communication based on the procedure described in U.S. Patent Application Serial No. 08/790,497, entitled "METHOD AND APPARATUS FOR PERFORMING SOFT HANDOFF IN A WIRELESS COMMUNICATIONS ~~SYSTEM",~~ SYSTEM," filed January 29, 1997, now U.S. Patent No. 6,151,502, issued November 21, 2000, by Roberto Padovani et al., assigned to the assignee of the present invention and incorporated by reference herein. In the exemplary embodiment, the base station can be added to the active set of the mobile station if the received pilot signal is above a predetermined add threshold and dropped from the active set if the pilot signal is below a predetermined drop threshold. In the alternative embodiment, the base station can be added to the active set if the additional energy of the base station (e.g., as measured by the pilot signal) and the energy of the base stations already in the active set exceeds a predetermined threshold. Using this alternative embodiment, a base station

which transmitted energy comprises an insubstantial amount of the total received energy at the mobile station is not added to the active set.

On page 8, please replace paragraph [0024] with the following paragraph:

FIG. 1 is a diagram of a data communication system of the present invention comprising a plurality of cells, a plurality of base stations and a plurality of mobile stations[[.]];

On page 7, please replace paragraph [0034] with the following paragraph:

[[FIGS.]] FIG. 7B is a diagram of the exemplary reverse link access channel;

On page 12, please replace paragraph [0045] with the following paragraph:

In the exemplary embodiment, the forward link capacity of the data transmission system of the present invention is determined by the rate requests of the mobile stations. Additional gains in the forward link capacity can be achieved by using directional antennas and/or adaptive spatial filters. An exemplary method and apparatus for providing directional transmissions are disclosed in U.S. Patent Application No. 08/575,049, entitled "METHOD AND APPARATUS FOR DETERMINING THE TRANSMISSION DATA RATE IN A MULTI-USER COMMUNICATION ~~SYSTEM",~~ SYSTEM," filed December 20, 1995, now U.S. Patent No. 5,857,147, issued January 5, 1999, by William R. Gardner et al., and U.S. Patent Application Serial No. 08/925,521, entitled "METHOD AND APPARATUS FOR PROVIDING ORTHOGONAL SPOT BEAMS, SECTORS, AND ~~PICOCELLS",~~ PICOCELLS," filed September 8, 1997, now U.S. Patent No. 6,285,655, issued September 4, 2001, by Stein A. Lundby et al., both assigned to the assignee of the present invention and incorporated by reference herein.

On page 15, please replace paragraph [0056] with the following paragraph:

In the exemplary embodiment, the data transmission is scheduled based in part on the quality of the communication link. An exemplary communication system which selects the transmission rate based on the link quality is disclosed in U.S. Patent Application Serial No. 08/741,320, entitled "METHOD AND APPARATUS FOR PROVIDING HIGH SPEED DATA

COMMUNICATIONS IN A CELLULAR ~~ENVIRONMENT",~~ ENVIRONMENT," filed September 11, 1996, now U.S. Patent No. 6,496,543, issued December 17, 2002, by Ephraim Zehavi, assigned to the assignee of the present invention and incorporated by reference herein. In the present invention, the scheduling of the data communication can be based on additional considerations such as the GOS of the user, the queue size, the type of data, the amount of delay already experienced, and the error rate of the data transmission. These considerations are described in detail in U.S. Patent Application No. 08/798,951, entitled "METHOD AND APPARATUS FOR FORWARD LINK RATE ~~SCHEDULING",~~ SCHEDULING," filed February 11, 1997, now U.S. Patent No. 6,335,922, issued January 1, 2002, by Edward G. Tiedemann Jr. et al., and U.S. Patent Application No. 08/835,632, entitled "METHOD AND APPARATUS FOR REVERSE LINK RATE ~~SCHEDULING",~~ SCHEDULING," filed August 20, 1997, now U.S. Patent No. 5,914,950, issued June 22, 1999, by Tao Chen et al., both are assigned to the assignee of the present invention and incorporated by reference herein. Other factors can be considered in scheduling data transmissions and are within the scope of the present invention.

On page 16, please replace paragraph [0059] with the following paragraph:

Modulator **74** can be implemented in many embodiments. In the exemplary embodiment (see FIG. 6), the interleaved data is covered with Walsh codes, spread with a long PN code, and further spread with the short PN codes. The spread data is provided to a transmitter within front end **62**. The transmitter modulates, filters, amplifies, and transmits the reverse link signal over the air, through antenna [[**46**]] **60**, on reverse link **52**.

On page 16, please replace paragraph [0061] with the following paragraph:

At base station **4**, the reverse link signal is received by antenna **46** and provided to RF unit **44**. RF unit **44** filters, amplifies, demodulates, and quantizes the signal and provides the digitized signal to channel element **42**. Channel element **42** despreads the digitized signal with the short PN codes and the long PN code. Channel element **42** also performs the Walsh code decovering and pilot and DRC extraction. Channel element **42** then reorders the demodulated data, decodes the de-interleaved data, and performs the CRC check function. The decoded data,

e.g., the data or message, is provided to selector element **14**. Selector element **14** routes the data and message to the appropriate destination. Channel element **42** may also forward a quality indicator to selector element **14** indicative of the condition of the received data packet.

On page 19, please replace paragraph [0071] with the following paragraph:

The transmission of the NACK messages can be implemented in a manner similar to the transmission of the error indicator bit (EIB) in the CDMA system. The implementation and use of EIB transmission are disclosed in U.S. Patent No. 5,568,483, entitled "METHOD AND APPARATUS FOR THE FORMATTING OF DATA FOR ~~TRANSMISSION",~~ TRANSMISSION," assigned to the assignee of the present invention and incorporated by reference herein. Alternatively, NACK can be transmitted with messages.

On page 19, please replace paragraph [0072] with the following paragraph:

In the second embodiment, the data rate is determined by base station **4** with input from mobile station **6**. Mobile station **6** performs the C/I measurement and transmits an indication of the link quality (e.g., the C/I measurement) to base station **4**. Base station **4** can adjust the requested data rate based on the resources available to base station **4**, such as the queue size and the available transmit power. The adjusted data rate can be transmitted to mobile station **6** prior to or concurrent with data transmission at the adjusted data rate, or can be implied in the encoding of the data packets. In the first case, wherein mobile station **6** receives the adjusted data rate before the data transmission, mobile station **6** demodulates and decodes the received packet in the manner described in the first embodiment. In the second case, wherein the adjusted data rate is transmitted to mobile station **6** concurrent with the data transmission, mobile station **6** can demodulate the forward traffic channel and store the demodulated data. Upon receipt of the adjusted data rate, mobile station **6** decodes the data in accordance with the adjusted data rate. And in the third case, wherein the adjusted data rate is implied in the encoded data packets, mobile station **6** demodulates and decodes all candidate rates and determine a posteriori the transmit rate for selection of the decoded data. The method and apparatus for performing rate determination are described in detail in U.S. Patent Application Serial No. 08/730,863, entitled "METHOD AND APPARATUS FOR DETERMINING THE RATE OF RECEIVED DATA IN

A VARIABLE RATE COMMUNICATION ~~SYSTEM",~~ SYSTEM," filed October 18, 1996, now U.S. Patent No. 5,751,725, issued May 12, 1998, by Tao Chen, and Patent U.S. Application Serial No. 08/908,866, also entitled "METHOD AND APPARATUS FOR DETERMINING THE RATE OF RECEIVED DATA IN A VARIABLE RATE COMMUNICATION ~~SYSTEM",~~ SYSTEM," filed August 17, 1999, now U.S. Patent No. 6,175,590, issued January 16, 2001, by Jeremy M. Stein, both assigned to the assignee of the present invention and incorporated by reference herein. For all cases described above, mobile station **6** transmits a NACK message as described above if the outcome of the frame check is negative.

On page 23, please replace paragraph [0083] with the following paragraph:

In the implementation wherein the C/I measurement is performed on a continuous pilot signal or the traffic signal, the prediction of the C/I at the second time slot based on the measurement of the C/I at the first time slot can be made more accurate by three embodiments. In the first embodiment, data transmissions from base stations **4** are controlled so that base stations **4** do not constantly toggle between the transmit and idle states at successive time slots. This can be achieved by queuing enough data (e.g., a predetermined number of information bits) before actual data transmission to mobile stations **6**.

On page 28, please replace paragraph [0097] with the following paragraph:

In the exemplary embodiment, the data packet is spread with the long PN code and the short PN codes. The long PN code scrambles the packet such that only the mobile station **6** for which the packet is destined is able to descramble the packet. In the exemplary embodiment, the pilot and power control bits and the control channel packet are spread with the short PN codes but not the long PN code to allow all mobile stations **6** to receive these bits. The long PN sequence is generated by long code generator **232** and provided to multiplexer (MUX) **234**. The long PN mask determines the offset of the long PN sequence and is uniquely assigned to the destination mobile station **6**. The output from MUX **234** is the long PN sequence during the data portion of the transmission and zero otherwise (e.g., during the pilot and power control portion). The gated long PN sequence from MUX **234** and the short PN_I and PN_Q sequences from short code generator **238** are provided to multipliers **236a** and **236b**, respectively, which multiply the

two sets of sequences to form the PN_I and PN_Q signals, respectively. The PN_I and PN_Q signals are provided to complex multiplier **214**.

On page 34, please replace paragraph [00115] with the following paragraph:

Sequence number (SEQ) fields **416** and **442** identify the first data unit in data fields **418** and **444**, respectively. The sequence number allows data to be transmitted out of sequence to mobile station **6**, e.g., for retransmission of packets which have been received in error. The assignment of the sequence number at the data unit level eliminates the need for frame fragmentation protocol for retransmission. The sequence number also allows mobile station **6** to detect duplicate data units. Upon receipt of the FMT, SEQ, and LEN fields, mobile station **6** is able to determine which data units have been received at each time slot without the use of special signaling messages.

On page 36, please replace paragraph [00123] with the following paragraph:

In the present invention, the traffic channel is also used to transmit messages from base station **4** to mobile stations **6**. The types of messages transmitted include: (1) handoff direction messages, (2) paging messages (e.g., to page a specific mobile station **6** that there is data in the queue for that mobile station **6**), (3) short data packets for a specific mobile station **6**, and (4) ACK or NACK messages for the reverse link data transmissions (to be described later herein). Other types of messages can also be transmitted on the control channel and are within the scope of the present invention. Upon completion of the call set up stage, mobile station **6** monitors the control channel for paging messages and begins transmission of the reverse link pilot signal.

On page 37, please replace paragraph [00124] with the following paragraph:

In the exemplary embodiment, the control channel is time multiplexed with the traffic data on the traffic channel, as shown in FIG. 4A. Mobile stations **6** identify the control message by detecting a preamble which [[as]] <u>has</u> been covered with a predetermined PN code. In the exemplary embodiment, the control messages are transmitted at a fixed rate, which is determined by mobile station **6** during acquisition. In the preferred embodiment, the data rate of the control channel is 76.8 Kbps.

On page 37, please replace paragraph [00125] with the following paragraph:

The control channel transmits messages in control channel capsules. The diagram of an exemplary control channel capsule is shown in FIG. 4G. In the exemplary embodiment, each capsule comprises preamble **462**, the control payload, and CRC parity bits **474**. The control payload comprises one or more messages and, if necessary, padding bits **472**. Each message comprises message identifier (MSG ID) **464**, message length (LEN) **466**, optional address (ADDR) **468** (e.g., if the message is directed to a specific mobile station **6**), and message payload **470**. In the exemplary embodiment, the messages are aligned to octet boundaries. The exemplary control channel capsule illustrated in FIG. 4G comprises two broadcast messages intended for all mobile stations **6** and one message directed at a specific mobile station **6**. MSG ID field **464** determines whether or not the message requires an address field (e.g., whether it is a broadcast or a specific message).

On page 38, please replace paragraph [00129] with the following paragraph:

In the present invention, the forward link power control channel is used to send the power control command which is used to control the transmit power of the reverse link transmission from remote station 6. On the reverse link, each transmitting mobile station 6 acts as a source of interference to all other mobile stations 6 in the network. To minimize interference on the reverse link and maximize capacity, the transmit power of each mobile station 6 is controlled by two power control loops. In the exemplary embodiment, the power control loops are similar to that of the CDMA system disclosed in detail in U.S. Patent No. 5,056,109, entitled "METHOD AND APPARATUS FOR CONTROLLING TRANSMISSION POWER IN A CDMA CELLULAR MOBILE TELEPHONE ~~SYSTEM",~~ SYSTEM," assigned to the assignee of the present invention and incorporated by reference herein. Other power control mechanism can also be contemplated and are within the scope of the present invention.

On page 39, please replace paragraph [00132] with the following paragraph:

In the present invention, the power control bits for all mobile stations **6** in communication with each base station **4** are transmitted on the power control channel. In the exemplary

embodiment, the power control channel comprises up to 32 orthogonal channels, which are spread with the 16-bit Walsh covers. Each Walsh channel transmits one reverse power control (RPC) bit or one FAC bit at periodic intervals. Each active mobile station **6** is assigned an RPC index, which defines the Walsh cover and QPSK modulation phase (e.g., inphase or quadrature) for transmission of the RPC bit stream destined for that mobile station **6**. In the exemplary embodiment, the RPC index of 0 is reserved for the FAC bit.

On page 44, please replace paragraph [00152] with the following paragraph:

A block diagram of the exemplary reverse link architecture of the present invention is shown in FIG. 6. The data is partitioned into data packets and provided to encoder **612**. For each data packet, encoder **612** generates the CRC parity bits, inserts the code tail bits, and encodes the data. In the exemplary embodiment, encoder **612** encodes the packet in accordance with the encoding format disclosed in the aforementioned U.S. Patent No. 5,933,462. Other encoding formats can also be used and are within the scope of the present invention. The encoded packet from encoder **612** is provided to block interleaver **614,** which reorders the code symbols in the packet. The interleaved packet is provided to multiplier **616,** which covers the data with the Walsh cover and provides the covered data to gain element **618**. Gain element **618** scales the data to maintain a constant energy-per-bit E_b regardless of the data rate. The scaled data from gain element **618** is provided to multipliers **650b** and **650d,** which spread the data with the PN_Q and PN_I sequences, respectively. The spread data from multipliers [[**652b**]] **650b** and **650d** are provided to filters **652b** and **652d**, respectively, which filter the data. The filtered signals from filters **652a** and **652b** are provided to summer **654a** and the filtered signals from filter **652c** and **652d** are provided to summer **654b**. Summers **654** sum the signals from the data channel with the signals from the pilot/DRC channel. The outputs of summers **654a** and **654b** comprise IOUT and QOUT, respectively, which are modulated with the in-phase sinusoid $COS(w_ct)$ and the quadrature sinusoid $SIN(w_ct)$, respectively (as in the forward link), and summed (not shown in FIG. 6). In the exemplary embodiment, the traffic data is transmitted on both the inphase and quadrature phase of the sinusoid.

On page 48, please replace paragraph [00164] with the following paragraph:

In the exemplary embodiment, the C/I measurement can be performed on the forward link pilot signal in the manner similar to that used in the CDMA system. A method and apparatus for performing the C/I measurement is disclosed in U.S. Patent Application Serial No. 08/722,763, entitled "METHOD AND APPARATUS FOR MEASURING LINK QUALITY IN A SPREAD SPECTRUM COMMUNICATION ~~SYSTEM",~~ SYSTEM," filed September 27, 1996, now U.S. Patent No. 5,903,554, issued May 11, 1999, by Keith W. Saints, assigned to the assignee of the present invention and incorporated by reference herein. In summary, the C/I measurement on the pilot signal can be obtained by despreading the received signal with the short PN codes. The C/I measurement on the pilot signal can contain inaccuracies if the channel condition changed between the time of the C/I measurement and the time of actual data transmission. In the present invention, the use of the FAC bit allows mobile stations **6** to take into consideration the forward link activity when determining the requested data rate.